

FACTORS IMPEDING THE ROLE OF INTERMEDIARIES IN URBAN FISH AND FISHERIES SUPPLY CHAIN; A CASE OF DAR ES SALAAM, TANZANIA

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Abstract: Despite the critical role played by intermediaries in supply chain and trade, along with various initiatives undertaken to enhance this role, fish and fisheries traders in Dar es Salaam-Tanzania are still discontented with the intermediaries' inability to undertake supply chain roles. This paper examined the impediments to intermediaries' role in urban fish and fisheries supply chain and recommended strategies for improving the same. Qualitative approach was adopted and data were drawn from a purposive sample of 73 respondents through in-depth interviews, focus group discussions and non-participant observation. Accordingly, intermediaries' role in urban fish and fisheries supply was impeded by poor transportation, inadequate storage facilities, and inability to improve quality and poor marketing services. The study recommends some ways to alleviate the impediments. These include ensuring suitable advocacy, regulations and knowledge, road infrastructures; provision of insurance covers during transportation; installation of modern storage, handling and packaging facilities and ensuring adequate power supply. The inability to value addition should be alleviated through sensitization of intermediaries on value addition, intermediaries should be empowered financially to buy adequate handling and storage facilities; government establish modern fishing processing industries as well as enforcement of quality assurance and standards for fish products. To improve marketing services, fishermen and intermediaries should be devised with innovative ways of determine appropriate market prices, fishermen and intermediaries be sensitized on urban markets as well as ensuring effective and smooth exchange of marketing information among stakeholders. Therefore, impediments to Intermediaries' role in Urban fish and fisheries supply chain in Dar es Salaam can be overcome through improvement in transportation, storage, value addition and quality improvement as well as improving marketing services.

Keywords: Fisheries, Factors, Intermediaries, Supply Chain, Urban

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INTRODUCTION

Background to the study

Urban fisheries products are increasingly becoming critical function due to increasing of urban population that raises the demand and supply for fish products to almost urban and peri-urban residents (URT, 2016; Mbelle, 2020). In Tanzania, about thirty percent of the approximately 44,928,923 million persons counted in the 2012 national population live in urban areas; precisely Dar es Salaam city being a home for around living of urban population that among other things attracts fish and fisheries products (NBS, 2012; Getu *et al.*, 2015). This provides critical role of fishery sub-sector in the economy which remains a significance of employment provision, source of government and individual income, as well as generating demand and supply for fisheries products (Kessuvan *et al.*, 2015; Sambuo & Kirama, 2018; Alam, 2010; URT, 2016). Supply chain for fisheries produces plays a very critical role in ensuring traders, collectors, agents and fisherman as well as consumers obtain sufficient fish for their home consumption as well as ensuring security for their health (Sambuo & Kirama, 2018). Economically speaking, fisheries production in developing countries and particularly in Tanzania is an essential livelihood activity for the fishery intermediaries and traders in general who constitute a significant portion of the urban residents (Alemu & Azadi, 2018; USAID, 2011). And the consumption rate for fish produces mostly depends on the locations of markets, types of fish, consumers income as well as tapping of fishing methods (Sambuo & Kirama, 2018; Obiero *et al.*, 2019). In particular, intermediaries and traders guarantee daily availability of diverse types of fish and fisheries products such as tilapia, dog fishes, emperors, snappers, sweetlips, parrotfish, surgeonfish and alike which assume security role and health protection for the urban consumers (Lauzon, 2010). On the other side of coin, fish is a perishable product which

requires special handling, storage as well as proper distribution through appropriate intermediaries (Nwabunike, 2015; Laraswati *et al.*, 2016). Moreover, supply chain consists of all parties directly or indirectly involved in fulfilling a request of products or services. Within each organization, for instance, producers, the supply chain includes all functions involved in receiving and filling the customers 'request of products and/or services, including but not limited to new product development, marketing, operations, distribution, finance and customer services (Chopra, 2013). Indeed, supply chain management refers to the set of approaches utilized to efficiently integrate suppliers, producers, warehouses and stores so that products and/or services are produced as well as distributed to the right quantities, at the right locations, in a right time to the right quality so as to satisfy service level requirement to final consumers (Chopra, 2013; Felea & Albăstroi, 2013). The supply chain of fish and fisheries products in the urban setting involves many aquatic and fisheries intermediaries, who undertake for completing the role of making the fishes available to the ordinary and final consumers (Biswal, 2015). These include agents, traders, fishermen, fish collectors and processors, wholesalers, retailers and final consumers (Laraswati *et al.*, 2016). The fisherman is an individual who harvests and sells their fish produces on agreed prices with collector or assembler. The second intermediary is an assembler who uses a collector boat or a truck to collect the fish or collects and receives the fisheries products from fisherman. These intermediaries sell the fish in a wholesale market to local retailers or local wholesalers or transporters who transport the fish to other market places. The fourth intermediary is commission agent who conducts public auctions. In some markets, agents also extend seasonal advances to the suppliers and short-term credit to the buyers (Islam & Habib, 2013; Laraswati *et al.*, 2016).

Finally, a consumer is an end of fish consuming partner in business supply chain. That is to say consumers receive the products from either retailers or buy it from ordinary traders in exchange of prices in the whole process of supply chain (Laraswati *et al.*, 2016;Nwabunike, 2015).

In this scenario, intermediaries form an important component of the urban fish and fisheries supply chain. Generally, intermediaries require to make sure that fisheries products are available at the ultimate customers in appropriate condition through the uses of suitable transportation facilities, distribution channels, storage facilities as well as sufficient marketing services to mention just a few (Islam & Habib, 2013;Aquaculture, 2020). Moreover, the central function of the fisheries intermediaries is to reduce the risks for fish damage and spoil in which fisherman and other ferry fish traders face in the supply chain (Oketch, 2014).Further, intermediaries play an important role of dissemination of information between the parties within fisheries supply chain (Von Broembsen, 2012).

Specifically, fisheries intermediaries play the role of facilitating transportation services mainly distribution for fish products (Islam & Habib, 2013;Laraswati *et al.*, 2016). This includes organizing as well as providing appropriate handling and means of transportation that serves to transfer the fish and fisheries products from one location to another mainly from the fisherman and/or collectors to the other urban markets (Laraswati *et al.*, 2016). Secondly, they facilitate storage services and facilities for the fish and fisheries produces including provision of cold storage facilities, packaging and packing materials (Naji, 2013). Thirdly, they provide market information to the parties involved in the supply chain as well as integrating to fisherman, traders and consumers (Islam & Habib, 2013;Von Broembsen, 2012). Fourthly, fisheries

intermediaries facilitate value addition and quality realization by ensuring the required inspection, grading and branding as well as packaging of the urban fisheries products (Islam & Habib, 2013). To this end, it is fair to conclude that, the role of fisheries intermediaries on business supply chain and particular in fish and fisheries trade is indispensable.

Globally, several governments and stakeholders has put an emphasis on improving the fisheries sector by adopting fisheries management including but not limited to; introduction of registration of fishing vessel, observation of closed fishing season, prohibition of destructive fishing methods, introduction of mesh regulations and establishing an effective monitoring, control and surveillance mechanism (Aquaculture, 2020;Murugan, 2018). Other initiatives such as super peak breeding season for fishery sectors have been adopted to boost the supply chain for fish products (Islam & Habib, 2013; Investigator, 2010).

Also, in Africa particularly Western and East Africa, the governments have introduced the fisheries mechanisms such as using adequate tools of fish harvesting, knowledge provisions on how to tap required fishes, provisions of reliable markets for fishes selling and purchasing as well as provision of clear guidance and regulations to mention just a few (Aquaculture, 2020;Lauzon, 2010)

Basing on the above noted role and efforts invested to the African countries and worldwide initiatives to support this sub-sector, the Government of Tanzania has also made several initiatives to ensure effective role of fisheries intermediaries notably smooth supply chain of various fisheries products and services including that of urban fisheries products. For example the government has established the fisheries act, 2003 (no. 22 of 2003), National Fisheries Policy as well as several initiatives such as Multi-Stakeholder Consultation for Anti-Dynamite Fishing Campaign Tanzania,

trade act and another related National Fisheries Policy of 2020, the National Strategy for Growth and Poverty Reduction I & II, Agricultural development policy as well as Fisheries Investment Plan at Bunda district for the purposes of improving, growing, promoting and development of the fisheries business and trade in particular (URT, 2003;URT, 2013;URT, 2015;Mbelle, 2020;WHO. *et al.*, 2020; Slade & Kalangahe, 2014;URT, 2010)

Unfortunately, despite the great importance attached to the intermediaries in the whole process of fish and fisheries supply chain and the initiatives made by the Government and other stakeholders in supporting the same, the role of intermediaries in supply chain of fish and fisheries produces in Africa and Tanzania in particular is highly discontented with some fishermen viewing intermediaries as a social parasites rather than business facilitators in fisheries supply chain (Slade & Kalangahe, 2014; Sivakumar & Daluwatte, 2018)

Furthermore, the intermediaries' failure to fisheries supply chain are caused by poor packaging facilities, poor storage issues, quality issues, harvesting issues, handling problems, lack of capital, poor knowledge of the fishermen, markets problems, transportation issues and alike that may hamper their critical role in urban areas (Lugendo & Mwaijande, 2015;Res, 2016;Laraswati *et al.*, 2016; Getu *et al.*, 2015). This is very misfortune because most of the fish and fisheries produces are perishable in nature and have very short shelf life if they lack the appropriate supply chain processes when it is delivering to the customers (Nwabunike, 2015).In addition, the critical strategy is ensuring the sustainable supply chain by minimizing the impediments which lead to intermediaries failure to supply of fish products to final consumers (Getu *et al.*, 2015;Nwabunike, 2015).

Beyond that, some fishermen feel exploited when they compare the prices at which the fish products are purchased by intermediaries immediately to the fish coastal market before delivery to the auction places or at any outskirts of urban markets (Naji, 2013). Although intermediaries provide facilities such as transportation, packaging facilities, handling materials, marketing services as well as storage facilities, most fishermen are not well satisfied with their role and just see them as jeopardizing their income (Islam & Habib, 2013). This further suggests that intermediaries are incapable enough of performing their role.

Consequently, the overall objective of this research is to assess the intermediaries' role in urban fish and fisheries supply chain with the view to establishing the extent to which the intermediaries are capable of performing their roles as well as examining the extent to the failure of the intermediaries from effectively playing their role of supporting fish and fisheries supply chain and suggest measures to improve the situation

Statement of the research problem

Urban fisheries supply chain provide significance role for ensuring intermediaries, customers and traders obtain food safety and security and above all contribute to raise the income and national economy (Alam, 2010).

Fishery supply chain is made up by fishermen, consumers and intermediaries. Hence intermediaries play very critical role such as provision of storage facilities, value addition, facilitate distribution and transportation as well as provision of marketing services to the parties involved in fishery supply chain (Islam & Habib, 2013; Aquaculture, 2020). Owing to the critical role played by intermediaries like storages services, transportation and alike, the government of Tanzania and other worldwide stakeholders has made tireless efforts to improve the fishery sector. For instance

Ministry of livestock and fisheries in Tanzania has reviewed policies and strategies for fisheries development as well as creation of enabling the fisheries mechanisms for fishing sub-sector development (URT, 2015). Not only that but also, the Ministry of livestock and fisheries has established fisheries Act for the purposes of supervising the issues of fisheries products and business (The Fisheries Act, 2003). Above, all, a number of fishing management policy, trade Act, The National Strategy for Growth and Poverty Reduction II, Multi-Stakeholder Consultation for Anti-Dynamite fishing Campaign as well as Fisheries Investment Plans been formulated for the purposes of overseeing the trade and practices, including the fishing and fisheries supply chain and business in particular (URT, 2010; URT, 2013; Mbelle, 2020; WHO *et al.*, 2020; URT, 2015; URT, 2013; URT, 2003, but, the role of fishery intermediaries still is not impressive following the problems hampering them like poor packaging facilities, poor storage issues, quality issues, harvesting issues, handling problems, distribution problems, lack of capital, poor knowledge of the fishermen, markets problems to mention just a few (Lugendo & Mwaijande, 2015; Res, 2016).

Unfortunately, despite of the government efforts in relation to various policies and programs geared to enhance fish business, the role of intermediaries in fisheries supply chain in Africa and Tanzania in particular is highly discontented being viewed as a problems with the context of fish and fisheries supply chain rather than trade facilitators for the supply chain of this process (Barman, 2016; Food & Report, 2013; Nwabunike, 2015). This has been seen that, majority of fishermen and ordinary traders complain about the price and services at which they are charged and imposed by majority of intermediaries at the fish coastal markets.

Moreover, various studies notably (Alemu & Azadi, 2018; Naji, 2013; USAID,

2018; Lugendo & Mwaijande, 2015; Res, 2016; Laraswati *et al.*, 2016; Getu *et al.*, 2015; Islam & Habib, 2013; Alam, 2010) have been undertaken regarding the fisheries business as well as established some practices performed by intermediaries on supply chain of fish and fisheries products; but mainly focused on coastal fish markets specifically from the fishermen to the auction places in which customers and other traders are easily found but could not go deeply to intermediaries role on supply chain areas in urban setting . Furthermore, the studies have not adequately demonstrated the extent to which the role of intermediaries in urban fish and fisheries and the impediments to these roles.

Owing to the above problematic situation, this research intended to assess the functions of intermediaries in urban fish and fisheries supply chain with the view to establish why the urban fish and fisheries intermediaries fail to play their principal functions of supporting urban fish and fisheries in particular and what measures to be taken to unrest the situation.

Study objectives

The objective of this paper is to assess the intermediaries 'role in urban fish and fisheries supply chain in a bid to recommend strategies for improving the intermediaries' role in urban fish and fisheries supply chain in Dar es Salaam Tanzania. Specifically, the paper examined impediments to intermediary's role to supply chain of fish and fisheries and recommended strategies for improving the intermediaries' role in urban fish and fisheries supply chain.

Literature review

Theoretical review

This study will employ Ecosystem Approach to Fisheries (EAF). This approach has been adopted by the FAO consultation Committee on Fisheries

(COFI) as the appropriate and practical way to fully implement the Code of Conduct for Responsible Fisheries (FAO, 2003). These including the ecological, social and economic elements of sustainability, thus addressing the main pillars of Sustainable Development (FAO, 2019). The EAF identifies and deals with all the positive and negative aspects associated with a fishery. This includes issues with little formal information and even issues generated from non-fishery sources (e.g. pollution, climate). The EAF process is to develop and implement an integrated set of management arrangements for a fishery to generate more acceptable, sustainable and beneficial community outcomes. The EAF planning steps have been specifically developed to apply to the management of fisheries (FAO, 2012). Similarly, EAF is defined by Ward et al. (2002) as an extension of conventional fisheries management recognizing more explicitly the interdependence between human well-being and ecosystem health and the need to maintain ecosystems productivity for present and future generations. This including conserving critical habitats, reducing pollution and degradation, minimizing waste, protecting endangered species.

Moreover, the main purpose of this approach to fisheries is to plan, develop and manage fisheries in a manner that addresses the multiplicity of societal needs and desires, without jeopardizing the options for future generations to benefit from a full range of goods and services provided by marine ecosystems (FAO, 2003). Thus, this approach to fisheries intended to balance diverse societal objectives, by taking account of the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries.

Accordingly, this theory show the way on how to plan, to develop and manage the fisheries trade. On the other hand, the theory will help the authors to generate strategic measures which can be used to promote and improve fisheries development and growth of the inland fish so as to enhance contributions in business supply chain which is the main thumb of this current work.

Empirical review

Literature reveals a number of factors that impede intermediaries' role in urban fish and fisheries supply chain mainly relating to transportation, quality and value addition, storage as well as market and market service as further discussed through available literature hereunder:

Impediments related to transportation for fisheries supply chain are mainly complicated and hampered by poor packaging devices as it makes complication for moving fisheries products from one location to another (Barman, 2016). Besides, intermediaries are hampered by poor handling methods designed to carry fish products (Card, 2018).

Moreover, intermediaries particularly fish collectors and agents complain about lack of proper landing sites which is conversant to poor auction sites, packing shades, landing terminal and proper drainage or hygienic facilities specific to purify fish products (Islam & Habib, 2013). Correspondingly, other factors that deters the supply chain for fish products is long distance to catch and transporting them from one market to another. However, such a distance forced the traders and intermediaries to charge unjustifiable price to ultimate consumers (Murugan, 2018; Islam & Habib, 2013).

Furthermore, in transportation services, intermediaries complaint about poor road networks whereby transports and landing stations are administered by some intermediaries who bridge the gap and make some money, which are a loss

to the fishermen while at the same time adding cost to the final consumers (Naji, 2013;Islam & Habib, 2013). The central point of this impediment is poor coordination to ensure distribution for fisheries produces (Barman, 2016;Islam & Habib, 2013). Other studies suggest related factor is inadequate and/or absence of transportation vehicles and sanitization during transportation of fresh fish supply chain (Alam,2010)

Impediments related to storage for fisheries supply chain are mainly complicated by number of factors that impede the intermediaries from facilitating this critical role of ensuring effective storage services for fisheries products. One of the impediments is related to inadequate or irregular electric power supply and warehouse in which fisheries products obtain cold temperature regulation (Getu *et al.*, 2015;Islam & Habib, 2013). The study went on for providing the impediment as lack of appropriate storage centres leading to intermediaries to add more cost for frizzing fish products (FAO, 2014; Islam & Habib, 2013). Furthermore, other related factor is physical loss which is characterized by loss in terms of throwing away or eaten by animals, spoilage as well as eaten by insects before delivering to final consumers (Hordijk & Jonkers, 2012;FAO, 2018;UNCTAD, 2017; FAO, 2012). Similarly, lack of appropriate fish containers jeopardizes fisheries storage in the fisheries supply chain (FAO, 2012;Alam, 2010).

Literature points yet another category of impediments of intermediaries' role as relating to value and quality in the supply chain process. One of the factors is breakage or damage of fish owing to inadequate packaging method and materials (Barman, 2016;Getu *et al.*, 2015). Factors observed in many studies is poor grading for fish which shows that fisherman are unable to determine the matured and non-matured fishes due to

lack of appropriate tools to harvest them (Islam & Habib, 2013).

Beyond that, intermediaries together with traders are hampered by limited fund to afford proper packaging and storage facilities which make them opt for less improved packaging materials like buckets, nets and sacks (Maribeth *et al.*, 2017;Islam & Habib, 2013). This further indicates that intermediaries are incapable of making use of the proper packaging materials. Above all, intermediaries are affected by ignorance from fishermen accompanied by lack of awareness on the issue of maintaining the quality and value of fish after harvesting (Alam, 2010;Islam & Habib, 2013). Other proposed factor is lack of grading tools and technology which can be used to assure the fish standard, weight and length. Thus such an impediment merely caused by poor harvesting tools when the fishermen opt small gill net, estuarine set bag net and marine set bag net to their harvesting fisheries tools (Alam, 2010;Getu & Misganaw, 2015).

Furthermore, intermediaries are in dilemma following the long waiting time of sorting, dirty equipment as well as poor preservation of fisheries products (Barman, 2016). Last but not least, lack of modern harvest tools by fishermen for harvesting fisheries products hamper the intermediaries role from effectively playing the role of value addition to final consumers (Nyaga, *et al.*, 2016). Also, problems of sufficient market infrastructures such as inadequate washing facilities, lack of separate working clothes, boots, gloves, portables waters and clean spaces are root factors impeding the intermediaries to the value addition and quality for fresh fisheries business (Bengwe *et al.*, 2017;Alam, 2010; Apart from that, intermediaries and traders for fisheries business are hampered by inadequate fish supply attributed to the lack of cold storage room with poor consumers as well as consumers choice (Nwabunike, 2015).

Finally, factors impeding provision of marketing services for fisheries supply chain were associated and responsible for the intermediary's inability to effectively facilitate the marketing information sharing for the fish and fisheries related business. Firstly, one of the factors is associated with lack of marketing schemes which is attributed to lack of marketing information (Maribeth *et al.*, 2017; Getu *et al.*, 2015). Other studies argue that poor purchasing power by consumers force the many intermediaries and group traders to sell the fish produce at a low price in order to avoid fish spoilage and deterioration (Getu *et al.*, 2015). Such an impediment is caused by lack of government subsidies for the fishermen to facilitate them to access the urban fish markets (Naji, 2013; Maribeth *et al.*, 2017). Other related factor proposed is inadequate price arrangement for fish products. This shows that prices are arranged at the auction points or depend on the physical appearance of buyers at the coastal fish markets (Sambuo & Kirama, 2018)

On the one hand, fish market is hampered by limited companies and stakeholders to export fish from landing sites to the urban and international markets (Nwabunike, 2015; Barman, 2016; Maribeth *et al.*, 2017). The other related issue is distance of markets from fish harvesting and selling (Nyaga, *et al.*, 2016; Sambuo & Kirama, 2018). Furthermore, market related factor is hampered by lack of awareness to intermediaries like traders and brokers in business supply chain. For instance the fish spoilage and contamination begins from the hand of intermediaries before selling to final consumers (Murugan, 2018; Alam, 2010). Intermediaries are confronted by high marketing costs, volume of sales as well as gender household to facilitate marketing services for fisheries supply chain (Nyaga *et al.*, 2016). As stated publicly by Nwabunike, (2015), fisheries business is confronted by problems of processing, consumers choices on fishes as well as inability to sell produce/goods

characterized by the price fluctuation by consumers.

Conceptual framework

The problem at hand concerns the intermediaries inability to undertake supply chain roles in fish and fisheries including inability to support transportation (Card, 2018; Barman, 2016; Murugan, 2018; Islam & Habib, 2013), inadequate storage services (Getu *et al.*, 2015; Islam & Habib, 2013), inability to support value and quality improvement (Maribeth *et al.*, 2017; Ibengwe, 2010; Alam, 2010; Nyaga, *et al.*, 2016). as well as provision of relevant marketing services (Naji, 2013; Maribeth *et al.*, 2017). In order to realize the improved intermediary's role in supply chain of fish and fisheries in urban areas, it is imperative to examine factors impeding intermediaries' role in supply chain of fish and fisheries in urban areas. It is expected that the information emanating from this assessment can be relied upon to improve intermediary's role in supply chain in urban fish and fisheries.

RESEARCH METHODOLOGY

This study was conducted in Dar es Salaam City and concentrated at Kivukoni fish market fisheries trade is undertaken in much greater volumes compared to other parts of the city. Also, this is among the main public market in which the intermediaries, fishermen and traders can be easily found. Dar es Salaam is the largest city in Tanzania that borders the Indian Ocean on the East and the Coast Region on the other sides. It is comprised of four Municipal Councils, namely Kinondoni, Ilala, Temeke, Ubungo and Kigamboni. The region had a population of 4,364,541 as of the official 2012 census (MoF, 2013). Fish and fisheries business is undertaken across all Dar es Salaam municipalities (Lugendo & Mwaijande, 2015). This

study employed a qualitative design owing to the sensitive nature of study and its ability to explore, explain, discover and understand the role of intermediaries and the challenges they face in executing them. The design made it possible to capture feelings, perceptions, attitudes, values, beliefs and experiences of various groups that were interviewed as formerly suggested by qualitative research experts (Astalin, 2013; Rose, Spinks, & Canhoto, 2015). Purposive sampling was employed considering the respondents experience and their ability to provide relevant information. The study employed a sample size of 73 represented who included fishermen, intermediaries, traders, market officials and customers, of urban fish and fisheries from Kivukoni fish market in Dar es Salaam. Methods of data collection included document review, in-depth interviews with 73 respondents as well as 6 Focus Group Discussion (FGD). The interviews lasted between 20 and 30 minutes. This was in order not to disturb the respondent's business time. The six groups consisted of 5-10 participants of men and women aged 23-56 years. The FGD sessions were moderated by the two researchers, one played the role of chairperson and the other one a recorder. Some of the document reviewed by researchers include former relevant research reports. Others were fisheries act, 2003, National Fisheries Policy of 2020, Multi-Stakeholder Consultation for Anti-Dynamite Fishing Campaign Tanzania, trade act, the National Strategy for Growth and Poverty Reduction I & II, Agricultural development policy as well as

Fisheries Investment Plan at Bunda. Moreover, in-depth interviews were conducted with around 73 respondents including, the intermediaries, fishermen, customers, traders and market officials. This method was particularly relevant given that it facilitated rapport building. It also enabled the researcher to re-structure the interview guide as well as modify the repeated questions based on the respondents' knowledge, ideas, views and perceptions. The interviews facilitated interaction between researchers and respondents given that some of the respondents could not read and write. Moreover, some of the respondents were in hurry in such a manner that they were not ready to fill in a questionnaire. Focus Group Discussion (FGD) comprised of 5 to 10 respondents and it helped to capture perceptions, opinions, beliefs, and attitudes of the intermediaries towards the role of intermediaries. It also provided checks and balance of the information adding to the reliability and validity of the data. Owing to the qualitative approach applied in this study, the researcher employed content analysis strategy to summarize, arrange, organize, interpret, analysis, and present the findings in relation to the main and specific objectives of the study. The reports were generated based on the research objectives. Qualitative data analysis was facilitated using MAXQDA 20 [VERBI Software, Marburg, Germany]. Data was grouped accordingly; codes were generated, leading to categories and themes.

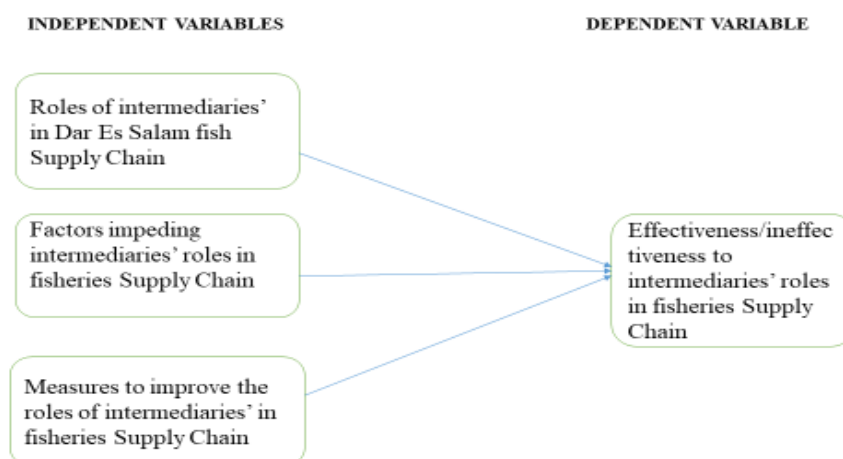


FIGURE 2.1. *Conceptual*

FINDINGS AND DISCUSSION

Findings show that a number of factors were responsible for constraining intermediaries' role in urban fish and fisheries supply chain. These factors were associated with (1) selection of transportation (2) provision of storage facilities and services (3) value addition and quality improvement as well as (4) marketing services. This is in response to the foregoing sections which shows that increasingly intermediaries are incapable of successfully playing their role in urban fish and fisheries supply chain.

Impediments to intermediaries' role to transportation for fish and fisheries.

Findings show that several factors impeded intermediaries from effectively playing their role of transportation for fish and fisheries related products. The first was poor packaging devices as confirmed by majority 56 % of the respondents. This ended up, intermediaries managed to use buckets as well as nylon sacks as their sole packaging materials. Intermediaries' inability to effectively play their role of transportation was further complicated by poor handling methods since there were no specific handling facilities for

easily handling fish products as confirmed by around 55% of the respondents. On top of that, majority of intermediaries complained that landing site for putting and selling fishes were poorly designed as attested by around 68% of the respondents. This has led the fish to get spoilt and deteriorated before selling to customers. The implementation of this role was further impeded by long distance to catch and transporting fish products since fishermen required to have adequate modern fishing facilities to catch big fish unless otherwise, they cannot as reported by 53% of the respondents. One respondent stated hereunder;

"In Tanzania, we lack modern fish harvesting facilities which can help the fishermen to go to deep sea to catch big fish. This obviously jeopardise the grade of fish as well as fishing trade in ensuring adequate distribution of fish from Kivukoni to hotels or elsewhere. We urge various relevant government organs ties to intervene this. (Male fishermen (42), Kivukoni fish Market)"

Another impediment was lack of adequate transportation vehicles specifically for fish products as confirmed by over 67% of the respondents. The respondents stated that, there were no specific vehicles which were designed to carry fish related products hence majority of traders opt for their own means of transportation such as toyo and canter or even using public transport. The researcher has assessed that, intermediaries complained of lack of distribution tools when it comes to distribute fish products to customers and hotels as attested by around 51% of the respondents, while 49% of the respondent opposed this role. Closely related to it was lack of insurance for fisheries transport as attested by over 71% of the respondents. The respondents complained that, they were unsure if they

can manage transportation and distribution of fish due to the fact that fish are highly perishable if they go long distance. Then, intermediaries failed to ensure adequate fish transportation due to poor road network as reported by 49% of the respondents. One respondent commented that;

“On approaching fish from Mwanza, Tanga and Lake Nyasa, we managed to use long vehicles, while on the way to this international market (Kivukoni fish market), roads were not constructed well for ferrying perishables products including that of fish and fisheries products (Group Discussion (7 members), Kivukoni fish Market)”

TABLE 4.9: Summary of Impediments to transportation of fish products

| Nature of impediments to transportation of fish | Responds | frequency | Rank |
|---|----------|-----------|------|
| Lack of transport insurance | 52 | 71% | 1 |
| Improper landing site | 50 | 68% | 2 |
| Inadequate transportation vehicles | 49 | 67% | 3 |
| Poor packaging devices | 41 | 56% | 4 |
| Poor handling methods | 40 | 55% | 5 |
| Long distance to catch and transportation of fish | 39 | 53% | 6 |
| Lack of distribution tools | 37 | 51% | 7 |
| Poor road networks | 36 | 49% | 7 |

Source; Field data, 2021

Drawing data from the displayed Table 4.5, it is clear that, the role of the fisheries intermediaries to transportation of fish products was impeded by the lack of transport insurance, improper landing site, inadequate transportation vehicles, poor packaging devices, poor handling methods, long distance to catch and transportation of fish as well as poor road networks. These findings correspond well with some former studies notably (Card, 2018; Barman, 2016; Naji, 2013; Islam & Habib, 2013; Alam, 2010) . It further suggests that this current study significantly contributes to the body of knowledge as far as this particular study area is concerned. However, the

impediments related to lack of insurance cover as well as distribution tools had not been well captured in the literature; may be because insurance cover and distribution facilities are the unique demand among the fisheries intermediaries and fishermen. These new findings could be one of contributing factors as well as adding value of this current study.

Factors impeding intermediaries' role from the storage for fisheries products;

Findings revealed a number of impediments of storage for fish products. One of them was related to irregular

electric power supply as confirmed by over 56% of the respondents. Intermediaries complained that, there is frequent power cut-off when fishes are on the hand of intermediaries. This role was further complicated by lack of appropriate storage centre for fisheries related products by the intermediaries as further dilapidated by 66% of the respondents. To this impediment, a number of interviewees emphasized that majority of intermediaries particularly fish collectors do not have central storage facilities when it comes to store fish products. This made intermediaries, fishermen and ordinary fishery businesses to use outdated fridges for making temporary storage of fish products as one respondent complains hereunder;

“Majority of fish vendors’ lack central storage facility in this market, though it is known as international market, yet there is unavailability of modern storage facilities. This made fish collectors to afford to use less or outdated fridges to maintain easily and temporary storage of fisheries products (Male intermediaries (29), Kivukoni fish market-Dar es Salaam”

Respondents also mentioned the lack of knowledge and awareness as among the critical factors that rendered the fisheries intermediaries particularly fish processors incapable of undertaking their role of facilitating storage for fish products as confirmed by 66% of the respondents. They went further by depicting that, the way they store fishes was locally made. For instance, intermediaries such as fish processors adopt sun drying, frying, as well as salting owing to the lack of enough skills and knowledge as the group discussion complains hereunder;

“Majority of fish processors, fishermen and traders were lack of knowledge and skills of

maintaining the necessary storage for fish products. This is basically caused by lack of adequate storage facilities, poor government enforcement of the same to ensure this practice at the ferry fish market place (Group Discussion (9, members), Kivukoni fish market-Dar es Salaam)”

Also, it was noted that, intermediaries were confronted with lack of storage facilities as attested by around 70% of the respondents. This made to resort to less constructed or poor one to store fish and fisheries species. For example, intermediaries managed to use boxes, non-electric refrigerators put with ice bars for making fisheries storage.

On the one hand, insufficient fish containers were hampering the intermediaries’ role from facilitating fisheries storage. They argued that, there is limited fish containers which could not be afforded by majority of traders in the fisheries supply chain. Correspondingly, majority of intermediaries such as fishermen as well as fish collectors’ lack of training associated to fish processing, harvesting and storage as reported by over 56% of the respondents. Critically, their primary education was not eligible to practice fisheries activities instead that, traditionally they practice the way they know in the fisheries trade.

Concluding from the above findings, it can be said that generally intermediaries’ inability to undertake their role of facilitating storage for the fish and fisheries products is associated with lack of storage facilities, lack of central storage, lack of knowledge and awareness on fishery storage, irregular electric power supply, lack of training by

traders and fishermen as well as limited fish containers in business supply chain. These findings reflect other previous findings like (FAO, 2012; Alam, 2010; Getu *et al.*, 2015; Islam & Habib, 2013). An

interesting discussion in this aspect was the lack of central storage facilities as well as limited fish containers when fishermen come to store fish products after harvesting from the seas.



FIGURE 4.1. Traditional storage methods of fish (Photo, Issa, I.M, 2021)

TABLE 4.10. Summary, Impediments to storage for fish products

| Nature of impediments of fish storage | Respon | frequency | Rank |
|--|--------|-----------|------|
| Lack of storage facilities | 51 | 70% | 1 |
| Lack of central storage | 48 | 66% | 2 |
| Lack of knowledge and awareness on fishery storage | 48 | 66% | 3 |
| Irregular electric power supply | 41 | 56% | 4 |
| Lack of training by traders and fishermen | 41 | 56% | 5 |
| Limited fish containers | 21 | 29% | 6 |

Source; Field data, 2021



FIGURE 4.2. Poor grading and sorting of fish (Photo; Issa M.I, 2021)

Impediments to intermediaries' role to value addition and quality for fish products;

Findings show that several factors impeded intermediaries from effectively playing their role of value addition and quality improvement of fish and fisheries related products. First impediment was inadequate packaging methods and materials as attested by 56% of the respondents, who affirmed that they collected fish products from the fishermen, or fish collectors by using poor packaging facilities. For example nylon sacks were used as their packaging materials. Another factor that deters value addition and quality was poor grading and sorting for fish as confirmed by number of respondents of about 74%. Further, they said that, at varying degree although they collect fish products such as octopus, Saladin, dagaa, sea shells, anadromous fish, dog fish and alike yet they see them from fishermen that totally were non-mature. This jeopardizes their income and faith from government and customers in particular.

Closely related to this was the limited fund to buy packaging and storage facilities as further dilapidated by over 73% of the respondents. Findings emphasized that, Kivukoni fish market receives fish products from other outskirt of Dar es Salaam and Tanzania fish markets, hence intermediaries such as agents, wholesalers, fish processors and collectors complained about the lack of enough capital to afford to buy adequate packaging and storage facilities. As a result, they ended up resorting to traditional and less convenient storage and packaging facilities like baskets, sacks and bags. This role was further complicated by lack of awareness in ensuring value and quality of fish. The way they determine quality produce was by using eyes as reported by over 64% of the respondents. Another problem confronted fisheries intermediaries was lack of grading tools and technology as confirmed by around 71% of the respondents. They further explained that

due to lack of grading tools most of fishermen harvested fish products without using grading tools but rather based on their experience of practice fishing methods that on the other side led to low quality of fish as well as small one. This critically depicted that, majority of traders, fisheries process and collectors did not have awareness to ensure fish grades due to the lack of modern grading technological tools for their fish products. This perhaps jeopardized the fishermen as well as fish collectors' revenue and government income.

Closely related to this was lack of adequate modern fishing facilities as further confirmed by over 60% of the respondents. They reported that, there is lack of appropriate fishing nets and fishing boats which could be used by them to go to deep sea for catching and harvesting fish products. One respondent confirmed this as narrated hereunder;

"We used mitumbwi, ngalawa and small eyes fish nets due to lack of enough capital to buy modern and adequate fishing methods. By the way, government punish us if we apply these fishing nets (small eyes-nets) to catch small fishes. We advise the government to provide grants to fishermen so as they can afford to buy modern fishing tools. (Fishermen (34), Kivukoni fish market)"

Moreover, majority of respondents stated that, complicated issues for fisheries supply chain in Tanzania were caused by the absence of fishing industries as reported by over 60% of the respondents. They further confirmed that, lack of fish processing industries led to post-harvest losses for fish if they are on the hand of fishermen or intermediaries. Impediments to value addition and quality of fish and fisheries supply chain are further summarized in the Table 4.11; Concluding from the above findings, it can be said that generally intermediaries' inability to undertake their role of value

addition and quality for fish and fisheries supply chain is associated with poor grading and sorting for fish, limited fund to buy packaging facilities, lack of grading tools and technology, lack of awareness on value and quality, lack of adequate modern fishing facilities as well as inadequate packaging methods and methods. These findings reflect other previous findings as noted by (Barman, 2016;Getu *et al.*, 2015;Maribeth *et al.*,

2017;Ibengwe, 2010; Alam, 2010; Islam & Habib, 2013;Getu & Misganaw, 2015; Nyaga, *et al.*, 2016; Bengwe *et al.*, 2017;Nwabunike, 2015). However, the impediment related to lack of adequate modern fishing facilities as well as lack of fishing process industries, had not been well captured in the past literature; may be because of fishing practices used by fishermen are old one owing to the nature of fish, sea or value and quality of fish.

TABLE 4.11: Summary, Impediments to value addition and quality for fish products

| Nature of impediments of value addition and quality | Responds | frequency | Rank |
|---|----------|-----------|------|
| Poor grading and sorting for fish | 54 | 74% | 1 |
| Limited fund to buy packaging facilities | 53 | 73% | 2 |
| Lack of grading tools and technology | 52 | 71% | 3 |
| Lack of awareness on value and quality | 47 | 64% | 4 |
| Lack of adequate modern fishing facilities | 44 | 60% | 5 |
| Lack of fishing industries | 44 | 60% | 6 |
| Inadequate packaging methods and materials | 41 | 56% | 7 |

Source; Field data, 2021

Factors impeding provision of marketing services for fisheries supply chain

Findings established that the commonest impediment on provision of market and marketing services faced by fisheries intermediaries had to do with lack of marketing information as stated by around 23% of the respondents. Moreover, poor purchasing power and ability by customers was deterred by fisheries traders as well as intermediaries when it comes to ensuring marketing and selling of fish products as confirmed by 33% of the respondents. They confirmed that, customers prefer to buy small fish rather they ignore the biggest one due to high price, this perhaps led to more waiting time to sell big fish that on the other hand jeopardized fish market, value and quality. Moreover, poor enforcement together with lack of government subsidies, grants to fishermen hampered the intermediaries' role from provisions of relevant market and marketing services for fish and fisheries supply

chain as confirmed by around 81% of the respondents. As a follow up on this, it was revealed that government authorities such as TASAC as well as ministry of livestock and fisheries in Tanzania forgot fishery intermediaries rather could not go down to the fisherman for listening the problems they face in fisheries supply chain. Another impediment was inadequate price as far as price arrangement for fish products as revealed by over 63% of the respondents. They argued that, the fish price may be changed based on high or low tides. Meaning and suggesting that, at the time of high tides the price decreases due to availability of many fish while at the low tides, there could be few fish leading to raise in fish price that further compromise marketing services of the fish and fisheries products.

Moreover, distance of the market for selling fish products was another complicated issue facing various intermediaries and fishermen as attested by 61% of the respondents. It thus proved impossible for various traders,

intermediaries and customers to travel to these places. This owes in part of long distance from one fish market to another or even residential areas for ferrying fish products. Examples of remote fish areas are Bagamoyo, Kilwa, Mwanza, Lake Nyasa as well as Zanzibar. Another impediment was lack of awareness about urban based markets by both fishermen and fisheries intermediaries as evidenced by 42% of the respondents. Owing to this, fishermen and fisheries intermediaries revealed it very complicated to reach timely as well as to produce fresh fish based on the urban market as noted below in the group discussion.

Apparently, fishermen and intermediaries have little awareness and knowledge on the better ways of approaching marketing services for fish products. They don't even use modern market services approaches to reach the potential

customers. They simply use Kivukoni market to be a central market while totally forget ordinary markets in Dar es Salaam. Unfortunately, they seem unaware of these markets, its customers and price in particular
(Group Discussion (6 members), Kivukoni fish market)

Another impediment was high payment fees and tax imposed by the government to the fish traders at the time of conducting fisheries trade as reported about 30% of the respondents. They further complained that, the market officers charged 15,000/- as the market fee for selling fisheries products. Impediments to market and marketing services of fish and fisheries supply chain is further summarized in the Table 4.12;

TABLE 4.12. Summary, Impediments to marketing services for fish and fisheries products

| Nature of impediments of value addition and quality | Respon ds | frequen cy | Rank |
|---|--------------|---------------|------|
| Lack of government subsidies and grants | 59 | 80% | 1 |
| Inadequate price and price arrangement for fish | 46 | 63% | 2 |
| Distance of fish markets | 45 | 62% | 3 |
| Lack of awareness on urban markets | 31 | 42% | 4 |
| Poor purchasing power by consumers | 24 | 33% | 5 |
| Fees payments(due and taxes) from intermediaries | 22 | 30% | |
| Lack of marketing information | 17 | 23% | 6 |

Source; Field data, 2021

Conclusively, the above findings show that impediments to market and marketing services for the fish and fisheries supply chain, rotated around to the lack of government subsidies and grants, inadequate price and price arrangement for fish, distance of fish markets, lack of awareness on urban markets, poor purchasing power by consumers, high amount (payment fees and taxes) from intermediaries, lack of marketing information. These

findings generally correspond well with former studies in various literatures notably on (Maribeth *et al.*, 2017;Getu *et al.*, 2015;Naji, 2013;Nwabunike, 2015;Barman, 2016;Sambuo & Kirama, 2018;Murugan, 2018;Alam, 2010). However, an interesting part of this discussion relates to the lack of government supports and grants as well as paying high taxes/fees for conducting fisheries business. On the

other hand, the impediment relating to fees payments has not been stated in the reviewed works. This could be among the unique contributions of this work.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The main objective of this study was to examine the factors impeding the role of intermediaries in the supply chain of urban fish and fisheries and recommending factors for improving the intermediaries' role in this respect. Findings show that factors impeding transportation of urban fish and fisheries transportation include the lack of transport insurance, improper landing site, inadequate transportation vehicles, poor packaging devices, poor handling methods, long distance to catch and transportation of fish, lack of distribution tools as well as poor road networks. Secondly, factors related to storage was rotated around to the lack of storage facilities lack of central storage, lack of knowledge and awareness on fishery storage, irregular electric power supply, lack of training by traders and fishermen as well as limited fish containers. Thirdly, impediment to value addition and quality for fish related products included poor grading and sorting for fish, limited fund to buy packaging facilities, lack of grading tools and technology, lack of awareness on value and quality, lack of adequate modern fishing facilities, lack of fishing industries as well as inadequate packaging methods and materials. Finally and lastly, factors relying on the provision of marketing services was reported and revealed through lack of government subsidies

and grants, inadequate price and price arrangement for fish, distance of fish markets, lack of awareness on urban markets, poor purchasing power by consumers, fees payments (due and taxes) from intermediaries as well as lack of marketing information.

Recommendations

In order to alleviate the above mentioned impediments, the following recommendations should be taken into account. Firstly, from the verbal expression from interviewees who support these findings, it was stated that; in alleviating the factors related to transportation for the fisheries products, the following measures should be taken to account. In the first place, advocacy, regulations and knowledge should be improved to ensure that fisheries intermediaries are adhere with effective transportation of fish and fisheries products. Responsible government authorities such Ministry of livestock and fisheries as well as TASAC in Tanzania should provide fishing aids. Also insurance covers should be provided with intermediaries in order to cover fish losses or spoilage during transportation. Also LATRA in Tanzania should improve road infrastructure including alternative roads in the city as well as fly over to halt the traffic congestion in the urban areas. This will improve transportation of fisheries products in urban areas.

Secondly, from the verbal conversation with Focus Group Discussion it was reported that; in order to alleviate factors impeding the intermediaries from facilitating the storage services, government and other responsible authorities should

provide capital, grants and loans to the fishermen and fisheries intermediaries so as to afford to buy adequate modern storage, handling and packaging facilities such as deep refrigerators and freezers. There must be reliable electric power supply that will ensure reliable cold storage when it comes to store fresh fish. This owes to invest heavily in modern fishing technology so as to minimize fish losses or deterioration.

Thirdly, from the verbal expression depicted by both interviewees and Focus Group Discussion, it was reported that in order to alleviate factors to value addition and quality improvement for the fisheries produces, fisheries intermediaries should be empowered financially and enough capital for buying handling and storage facilities. Moreover, intermediaries should be given proper knowledge and awareness for ensuring fish value and quality so as to attract customers who are about to buy fish. Also, the authorities responsible for quality assurance and value additions such as Tanzania Bureau of Standards (TBS) as well as the Small Industries and Development Organisation (SIDO) should play their active role in ensuring quality assurance and standards of perishables commodities including fisheries products in Dar es Salaam, Tanzania. Also various stakeholders including government should pay attention to establish modern fishing processing industries so as to minimize post-harvest losses for fisheries supply chain.

Moreover, interviewees as well as two Group Discussion depicted that; In order to alleviate factors related to facilitate marketing services,

intermediaries particularly fish processors as well as collectors should be devised with innovative ways of determine appropriate market prices for the fisheries trade. Also government officers from the fisheries markets should minimize fees paid out by fisheries intermediaries as well as fishermen so as to afford to conduct fisheries business. Marketing strategies such as public auction as well as fishing landing site should be improved in order to promote market and marketing services for the urban fish and fisheries supply chain. On the other hand, intermediaries should take affirmative efforts to find potential customers. This is through selling fisheries products to the residential areas.

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